

Glossary

Aesthetics - forest value, rooted in beauty and visual appreciation, affording inspiration, contributing to the arts, and providing a special quality of life.

Age Class – 1) one of the intervals into which the age of trees is placed for classification or use. 2) a distinct aggregation of trees originating from a single natural event or regeneration activity, or a grouping of trees, e.g., 10-year age class, as used in inventory or management.

Allowable Harvest – the calculation of the amount of forest products that may be harvested, annually or periodically, from a specified area over a stated period, in accordance with the objectives of management.

Alluvial soil – a soil developing from recently deposited water-borne sediments and exhibiting essentially no horizon development or modification of the recently deposited materials.

Anadromous – migrating up rivers from the sea to breed in fresh water.

Anthropogenic – of human origin or influence.

Aquifer – a saturated, permeable geologic unit of sediment or rock that can transmit significant quantities of water under ordinary hydraulic gradients.

Area of Critical Environmental Concern (ACEC) – area within the Commonwealth of Massachusetts where unique clusters of natural and human resource values exist, and which is worthy of a high level of concern and protection (from 301 CMR 12.00)

Aspect - the orientation of a slope with respect to the compass; the direction toward which a slope faces; north facing slopes are generally cooler than south facing slopes.

Basal area (BA) - a measurement of the cross-sectional area of a tree trunk in square feet at breast height. Basal area of a forest stand is the sum of the basal areas of the individual trees, and is reported as BA per acre.

Biodiversity (Biological Diversity) – 1) the variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at spatial scales ranging from local through regional to global. 2) an index of richness in a community, ecosystem, or landscape and the relative abundance of these species

Biological legacy - an organism, a reproductive portion of an organism, or a biologically derived structure or pattern inherited from a previous ecosystem. Note: biological legacies often include large trees, snags, and down logs left after harvesting to provide refugia and to structurally enrich the new forest stand.

Biological maturity - the point in the life cycle of a tree at which there is no net biomass accumulation; the stage before decline when annual growth is offset by breakage and decay.

Biological Monitoring - repeated sampling of plant and animal species occurrence and structural habitat characteristics to track baseline conditions and/or to determine pre- and post-treatment conditions in order to evaluate the effectiveness of management activities relative to established goals and objectives.

Biomass – 1) *ecology* - the total dry organic matter at a given time of living organisms of one or more species per unit area (species biomass) or of all the species in the community (community biomass). 2)

Glossary

the living or dead weight of organic matter in a tree, stand, or forest in units such as living or dead weight, wet or dry weight, ash-free weight, etc. 3) *harvesting* - the wood product obtained (usually) from in-woods chipping of all or some portion of trees including limbs, tops, and unmerchantable stems, usually for energy production.

Board foot - a unit of wood 1 inch thick, 12 inches long, and 12 inches wide. One board foot contains 144 cubic inches of wood.

Bole - the main trunk of a tree.

Browse - portions of woody plants including twigs, shoots, and leaves used as food by such animals as deer.

Buffer Strip – area along a road where intensity of cutting is restricted to maintain a forested appearance and an attractive landscape; harvesting in buffer areas is limited to light cutting where 50% or less of the basal area is removed at any one time (as per 304 CMR 11.00).

C.F.I. (Continuous Forest Inventory) - a sampling method using permanent plots that are visited periodically to inventory large forest properties. Its purpose is to ascertain the condition of the forest as regards health, growth, and other ecosystem dynamics.

Canopy - the upper level of a forest, consisting of branches and leaves of taller trees. A canopy is complete (or has 100 percent cover) if the ground is completely hidden when viewed from above the trees.

Classified Lands – lands classified under M.G.L. Chapters: 61- CLASSIFICATION AND TAXATION OF FORESTLANDS AND FOREST PRODUCTS, 61A - ASSESSMENT AND TAXATION OF AGRICULTURAL AND HORTICULTURAL LAND, and 61B - CLASSIFICATION AND TAXATION OF RECREATIONAL LAND

Coarse Woody Debris – dead woody material (e.g., dead boles, limbs, and large root masses) on the ground in the forest stands or in streams – *note*: the type and size of material designated as coarse woody debris varies among classification systems.

Community - a collection of living organisms in a defined area that function together in an organized system through which energy, nutrients, and water cycle.

Conservation - the wise use and management of natural resources.

Coppice - (even-aged or uneven-aged) any type of cutting in which dependence is placed mainly on vegetative reproduction.

Core Habitats - the most viable sites presently identified in Massachusetts by the Natural Heritage and Endangered Species Program to maintain populations of rare species and natural communities.

Corridor - a strip or block of habitat connecting otherwise isolated units of suitable habitats that allow the dispersal of organisms and the consequent mixing of genes. A corridor is also beneficial to plant populations that have been isolated due to fragmentation.

Cover Type – the plant species forming a plurality of composition across a given area, e.g., oak-hickory, northern hardwood, maple-birch.

Glossary

Crown class - an evaluation of an individual tree's crown in relation to its position in the canopy and the amount of full sunlight it receives. The four recognized categories are: dominant (D), codominant (C), intermediate (I), and overtopped or suppressed (S).

D.B.H. (Diameter at Breast Height) - the diameter of a standing tree measured at 4.5' above the ground.

Daylight – *verb*; to cut vegetation adjacent to a road or other open area to increase the amount of sunlight reaching its surface.

Den Tree – living hollow trees that are used as homes by mammals or birds.

Diameter Class (Size Class) – any of the intervals into which a range of diameters of tree stems or logs may be divided for classification and use – e.g., 0 – 3.5" DBH = seedling – sapling, 3.5" – 9.5" DBH = pole timber, 9.6" – 14.5" DBH = small sawtimber, > 14.6" + DBH = large sawtimber.

Diameter-limit cut - a timber harvesting treatment in which all trees over a specified diameter may be cut. Diameter-limit cuts often result in high-grading.

Disturbance - a natural or human-induced environmental change that alters one or more of the floral, faunal, and microbial communities within an ecosystem. Timber harvesting is the most common human disturbance. Windstorms and fire are examples of natural disturbance.

Duff – the partially decomposed organic material of the forest floor beneath the litter of freshly fallen twigs, needles, and leaves.

Ecological Reference Condition - a condition that represents the state of an ecosystem at a particular time in history, deemed by society to be of particular interest. In Massachusetts, such reference conditions include, but are not limited to, the field and pasture ecosystem at the height of agricultural development in the 1800s, the oak-chestnut woodland ecosystem maintained by tribes of woodland Indians prior to European arrival and settlement, or the extensive beech-maple and spruce-fir forests prior to Indian arrival. Due to changes in climate or pathogens, some reference conditions are impossible to duplicate exactly today (such as the chestnut component of oak-chestnut woodlands, or the extent of the spruce-fir forests prior to Indian arrival) and others are completely out of reach (such as the tundra and taiga conditions following the retreat of the last glacier from this region).

Ecologically Viable - able to maintain process, function and structure over time.

Ecology - the study of interactions between living organisms and their environment.

Ecosystem - a natural unit comprised of living organisms and their interactions with their environment, including the circulation, transformation, and accumulation of energy and matter.

Ecotype - a genetic subdivision of a species resulting from the selective action of a particular environment and showing adaptation to that environment. Ecotypes may be geographic, climatic, elevational, or soil related. Red maples and northern red oaks are both adapted to moist soils, but can also be found on drier sites where the genetic difference is their enhanced ability to retain water.

Edge - the boundary between open land and woodland or between any two distinct ecological communities. This transition area between environments provides valuable wildlife habitat for some species, but can be problematic for sensitive species, due to increased predation and parasitism.

Glossary

Endangered Species (E) - native species that are in danger of extinction throughout all or part of their range, or which are in danger of extirpation from Massachusetts, as documented by biological research and inventory.

Even-aged stand - a group of trees that do not differ in age by more than 10 to 20 years or by 20 percent of the rotation age.

Extended rotation - a rotation longer than necessary to grow timber crops to financial maturity or size; generally used to provide habitat or nontimber values.

Featured Resource – the resource that is the primary focus of management activities.

Filter Strip – an area of forestland, adjoining the bank of a water body, where no more than 50% of the basal area can be cut at any one time (as per 304 CMR 11.00).

Ford – a stream crossing using a stable stream bottom as the roadbed.

Forest interior dependent species - animal species that depend upon extensive areas of continuous, unbroken forest habitat to live and reproduce, and are susceptible to higher rates of predation and population decline when interior forest habitat is fragmented or disturbed.

Forest types - associations of tree species that commonly occur because of similar ecological requirements. Massachusetts three major forest types are northern hardwoods, oak/hickory, white pine and oak/pine.

Fragmentation - the segmentation of a large tract or contiguous tracts of forest to smaller patches, often isolated from each other by nonforest habitat. Fragmentation often results from the collective impact of residential and commercial development, highway and utility construction, and other piecemeal land use changes.

Girdling – a method of killing unwanted trees by cutting through the living tissues around the bole. Girdling can be used instead of cutting to prevent felling damage to nearby trees. Girdled trees can provide cavities and dead wood for wildlife and insects.

Grade – the angle of an inclined surface as expressed in terms of percent slope: vertical rise per 100' of horizontal run.

Growing Stock – all the trees growing in the forest or in a specified part of it, usually commercial species, meeting specified standards of size, quality, and vigor, and generally expressed in terms of number or volume.

Habitat - the geographically defined area where environmental conditions (e.g., climate, topography, etc.) meet the life needs (e.g., food, shelter, etc.) of an organism, population, or community.

Herbaceous – any seed-producing plant that does not develop persistent woody tissue above ground.

High Risk - stands which will not survive the next decade or in the same period, due to decay, insect or disease mortality or other factors, will suffer a net volume or value loss.

Glossary

High-grading - the removal of the most commercially valuable trees (high-grade trees), often leaving a residual stand composed of trees of poor condition or species composition – note high grading may have both genetic implications (i.e., dysgenic effects) and long-term economic or stand health implications.

Historic vernacular landscapes - those landscapes that reflect past human behavior by containing remnants of past spatial organization, land use, circulation, vegetation, structures, and objects; and in which the physical, biological, and cultural features reflect the customs and everyday lives of people; i.e., historic farmsteads with remnant orchards, roads, stone walls, gardens, archaeological sites.

Horizontal structure - the spatial arrangement of plant communities; a complex horizontal structure is characterized by diverse plant communities within a given geographic unit.

Immature - stands which have not reached maturity.

Improvement Cutting – a cutting made in a stand past the sapling stage for the purpose of improving composition and quality by removing trees of undesirable species, form or condition from the main canopy.

Interior Forest - forest >300 m from a fragmenting edge, such as a road or powerline.

Intermediate Cuttings – operations conducted in a stand during its development from regeneration stage to maturity. These are done to improve the quality of the existing stand, increase its growth and provide for earlier financial returns, without any effort directed at regeneration.

Landing – any place where round timber is assembled for further transport, commonly with a change in method; generally, a cleared area where log trucks are loaded.

Landscape – a special mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

Legacy Trees - individual trees retained after harvesting, or that have survived natural disturbances, that provide a biological legacy (see Biological Legacy). These trees are often much bigger and older than the average trees in the forest, and their physical structure is much more complex than that of their younger neighbors.

Management plan - a document prepared by natural resource professionals to guide and direct the use and management of a forest property. It consists of inventory data and prescribed activities designed to meet ownership objectives.

Mast – seed produced by woody-stemmed, perennial plants, generally referring to soft (fruit) or hard (nut) mast.

Mature - stands which have reached the stage where the main purpose for which they were maintained has been fulfilled - either having produced the best supply of specified products or earned a specified rate of interest.

Merchantable – of trees, crops or stands, of a size, quality and condition suitable for marketing under given economic conditions even if so situated as not to be immediately accessible for logging. Syn., operable.

Glossary

Mesic – sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

Multiple use and value - a conceptual basis for managing a forest area to yield more than one use or value simultaneously. Common uses and values include aesthetics, water, wildlife, recreation, and timber.

Natural Community - recurrent assemblages of plants, animals, and associated ecological processes.

Niche - the physical and functional location of an organism within an ecosystem; where a living organism is found and what it does there.

Old Growth Forest - an area of contiguous forest that: (1) shows no evidence of significant human, post-European disturbance that originated on site; (2) has a significant component of older trees that are greater than 50 percent of the maximum longevity for the particular species; (3) is at least five acres in size; and (4) has either: (i) the capacity for self-perpetuation; or (ii) the characteristics of a forest which are indicative of an old growth forest. (Note: This definition comes from proposed legislation in the Massachusetts legislature)

Old Growth Stand – a stand that has been formally designated as an old growth stand. These areas must meet a preponderance of the following four criteria: (1) be of a size that is large enough to be self sustaining; (2) show no evidence of significant post-European disturbance; (3) have a component of trees that are greater than 50% of the maximum longevity for that species; and (4) be self-perpetuating.

Outstanding Resource Water (ORW) – as defined in the Massachusetts Water Quality Standards (314 CMR 4.04) - refers to waters with exceptional socio-economic, recreational, ecological and/or aesthetic values. To protect these values, potentially harmful activities are sometimes restricted in the drainage areas that supply these waters, thus the ORW *watershed areas* are often delineated as well.

Patch - a small area of a particular ecological community surrounded by distinctly different ecological communities, such as a forest stand surrounded by agricultural lands or a small opening surrounded by forestland.

Permeability – the ease with which gases, liquids, or plant roots penetrate or pass through a bulk mass or layer of soil

Poletimber - trees greater than 4.9" dbh and less than sawtimber size.

Population - a group of individuals of one plant or animal taxon (species, subspecies, or variety).

Preservation - a management philosophy or goal which seeks to protect indigenous ecosystem structure, function, and integrity from human impacts. Management activities are generally excluded from “preserved” forests.

Primary Forests - areas that have continually supported forest growth throughout the time of European settlement. Primary forest in Massachusetts has usually been cut repeatedly over time (especially for fuelwood in colonial times), but was never converted to agricultural use such as pasture or cropland, and thus retains a more intact soil micro-climate compared to second-growth forests that occur on abandoned agricultural lands.

Glossary

Rare species - species that exist only in one or a few restricted geographic areas or habitats or occur in low numbers over a relatively broad area; also, plant and animal species listed by the Commonwealth of Massachusetts as 'Endangered', 'Threatened', or 'Special Concern'.

Recreation – outdoor recreation is generally considered to be of two types. *Extensive recreation* is that which occurs throughout a large area and is not confined to a specific place or developed facility e.g., hunting, fishing, hiking, horseback riding, snowmobiling, cross-country skiing, etc. Syn, dispersed. *Intensive recreation* includes high density recreational activities that take place at a developed facility e.g., camp and picnic grounds and swimming beaches.

Regeneration – the renewal of a tree crop, whether by natural or artificial means - may be broken down into those treatments that produce stands originating from seed (high forest) or from vegetative regeneration (coppice or sprouts) and create even-aged or uneven-aged stands. Syn. reproduction.

Release - removal of overtopping trees to allow understory or overtopped trees to grow in response to increased light.

Residual stand - trees remaining following any cutting operation.

Restoration – *ecology*: the process of returning ecosystems or habitats to their original structure and species composition.

Riparian – related to or located in conjunction with a wetland, on the bank of a river or stream but also at the edge of a lake or tidewater – note the riparian area significantly influences, and is significantly influenced by, the neighboring body of water.

Riparian Forest - forest occurring in conjunction with a stream, river, wetland, pond, or lake.

Rotation – the planned number of years between the formation or regeneration of a crop or stand and its final cutting at a specified stage of maturity.

Salvage Cutting – the removal of dead trees or trees damaged or dying because of injurious agents other than competition; usually designed to recover economic value that would otherwise be lost.

Sanitation Cutting – a cutting involving the elimination of trees that have been attacked or appear in imminent danger of attack by dangerous insects or fungi in order to prevent the pests from spreading to other trees.

Sapling - a tree greater than 1" dbh and less than 4.9" dbh.

Sawtimber - a tree greater than 9.0" dbh (hardwoods) or 11.0" dbh (softwoods) having at least 8' of usable length and less than 50% cull.

Seedling - a young tree, less than sapling size of seed origin.

Seed-trees – individual trees left after a harvest operation to provide a seed source for forest regeneration.

Selection (uneven-aged management) - removal of mature timber, usually the oldest and largest trees, either as single scattered individuals or in small groups at relatively short intervals, repeated indefinitely, whereby the continuous establishment of reproduction is encouraged and an uneven-aged stand is maintained.

Glossary

Seral Stages (Seres)- the stages of ecological succession of a plant community; the characteristic sequence of biotic communities that successfully occupy and replace each other, altering in the process some components of the physical environment over time.

Shade-tolerant – having the capacity to compete for survival under shaded conditions.

Shelterwood (even-aged management) - removal of the old stand in a series of cuttings that extend over a relatively short portion of the rotation, by means of which the establishment of essentially even-aged reproduction under the partial shelter of seed trees is encouraged.

Silvicultural System – a planned series of treatments for tending, harvesting, and re-establishing a stand – *note* the system name is based on the number of age classes (coppice, even-aged, two-aged, uneven-aged) or the regeneration method (clear-cutting, seed tree, shelterwood, selection, coppice, coppice with reserves) used.

Silviculture – the art and science of controlling the establishment, composition, growth, health, and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

Site quality - the inherent productive capacity of a specific location (site) in the forest affected by available growth factors (light, heat, water, nutrients, anchorage); often expressed as tree height at a given age.

Site - the combination of biotic, climatic, topographic, and soil conditions of an area; the environment at a location.

Size Classes – intervals of tree diameters used to classify timber. Size classes typically include: seedling/sapling, poletimber, and sawtimber.

Slash – tops, branches, slabs, sawdust or debris resulting from logging or land clearing operations.

Snag – a standing dead tree, greater than 20' tall, which has decayed to the point where most of its limbs have fallen; if less than 20' tall it is referred to as a *stub*.

Special Concern (SC) species - native species that have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts.

Species - a subordinate classification to a genus; a group of reproductively isolated organisms that have common characteristics, such as eastern white pine or white-tailed deer.

Stand – 1) *ecology*: a contiguous group of similar plants. 2) *silviculture*: a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit..

Stand Condition – the condition of a stand described as one of the following: non-stocked, high risk, sparse, low quality, mature, immature, all aged, or in process of regeneration.

Glossary

Stewardship - the wise management and use of forest resources to ensure their health and productivity for the future.

Stocking – the degree of occupancy of an area by trees.

Succession (or Ecological Succession) - an orderly, directional and therefore predictable process of development that involves changes in species structure and community processes over time. It results from a modification of the physical environment by the community and culminates in a stabilized ecosystem in which maximum biomass and symbiotic functions are maintained.

Sustainable management - the stewardship and use of forests and forestlands in such a way and at such a rate that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill relevant ecological, economic and social functions at local, national, and global levels, and that does not cause damage to other ecosystems.

Sustained yield - historically, a timber management concept in which the volume of wood removed is equal to growth within the total forest. The concept is applicable to non-timber forest values as well.

T.S.I. (Timber Stand Improvement) - a term comprising all intermediate cuttings made to improve the composition, constitution, condition and increment of a timber stand. The practice may be *commercial* (yielding net revenues), *pre-commercial* or *non-commercial*; the cost of accomplishing TSI work generally exceeds the value of the products removed.

Talus Slope - an uneven landform typically covered by coarse rock debris forming a more or less continuous layer, usually at the base of a steep slope. Talus slopes may or may not be covered by duff and litter, and thus may or may not support tree growth and other vegetation.

Thinning - a cutting whose purpose is to control the growth of stands by adjusting stand density.

Threatened Species (T) - native species that are likely to become endangered in the foreseeable future, or which are declining or rare as determined by biological research and inventory.

Tolerance - a characteristic of trees that describes the relative ability to thrive with respect to the growth factors (light, heat, water nutrients, anchorage). For instance, a “shade tolerant” species may thrive at low light levels.

Understory - the smaller vegetation (shrubs, seedlings, saplings, small trees) within a forest stand, occupying the vertical zone between the overstory and the herbaceous plants of the forest floor.

Uneven-aged stand - a group of trees of various ages and sizes growing together on a site.

Value added – 1) converting outputs into products of greater value; 2) increasing the economic value of an agricultural commodity through changes in genetics, processing or diversification; 3) the process of increasing the consumer appeal of a commodity.

Vernal Pools - a class of wetland characterized by small, shallow, temporary pools of fresh water present in spring and fall, which typically do not support fish but are very important breeding grounds for many species of amphibians. Some species are totally dependent upon such ponds; examples are spring peepers and mole salamanders.

Glossary

Vertical structure - the arrangement of plants in a given community from the ground (herbaceous and woody shrubs) into the main forest canopy; a complex vertical structure is characterized by lush undergrowth and successive layers of woody vegetation extending into the crowns of dominant and codominant trees.

Wetlands – transitional areas between aquatic and terrestrial ecosystems that are inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation – Massachusetts defines “wetlands” according to M.G.L. Chapter 131, Sec. 40 “Wetlands Protection Act” and 310 C.M.R. 10.00 “Wetland Protection Regulations.”